Future Learn

Issued 27th April 2020. futurelearn.com/certificates/fxua9va

Certificate of Achievement

Dan-Adrian German

has completed the following course:

UNDERSTANDING QUANTUM COMPUTERS
KEIO UNIVERSITY

This online course introduced quantum computers and quantum computation, including necessary background in physics, mathematics and computer science.

4 weeks, 5 hours per week

Rodney Van Meter
Professor, Faculty of Environment and Information Studies
Keio University

Takahiko Satoh
Project Lecturer, Graduate School of Science and Technology
Keio University

Keio University
1858
CALAMVS GLADIO FORTIOR

The person named on this certificate has completed the activities in the attached transcript. For more information about Certificates of Achievement and the effort required to become eligible, visit futurelearn.com/proof-of-learning/certificate-of-achievement.

This learner has not verified their identity. The certificate and transcript do not imply the award of credit or the conferment of a qualification from Keio University.

TRANSCRIPT

Keio University

Dan-Adrian German

has completed the following course:

UNDERSTANDING QUANTUM COMPUTERS
KEIO UNIVERSITY

88%
AVERAGE TEST SCORE

This online course introduced quantum computers and quantum computation, including necessary background in physics, mathematics and computer science. The mysteries of quantum superposition, interference and entanglement were covered in detail. Quantum algorithms, hardware and the new industry were central topics.

STUDY REQUIREMENT
4 weeks, 5 hours per week

LEARNING OUTCOMES
- Describe a few key applications of quantum computing
- Explain the role of quantum computing in the future and recognize the role of Moore's Law in the future of computing
- Prepare for a mathematical course in quantum information concepts
- Explore the value proposition in available and forthcoming quantum information technology products
- Identify the importance of quantum superposition, entanglement and interference in quantum algorithms

SYLLABUS
- Waves and interference
- Quantum superposition and entanglement
- Computational complexity
- The quantum Fourier transform
- Shor's algorithm for factoring large numbers
- Grover's algorithm
- Quantum chemistry and machine learning
- Physical phenomena as quantum bits (qubits)
- Quantum computing hardware and architecture
- Quantum error correction
- The quantum information technology industry

Future Learn